Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date: 20.04.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	**M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.**
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	20.04.2022

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82.5	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	295.5	297	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.83	21.84	21.83

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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ಕಛೇರಿ ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಜಿ.ಕೆ.ಎಂ.ಪಿ
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Date : 20.04.2022

Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer , Dasarahalli Sub division, BBMP, Bangalore.**

Agency : **M/s KTR Constructions(Prop.Sri.K.T.Ravi), Contractor, Mysore.**

Name of Work Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 18.04.2022 to 20.04.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	22.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Date : 20.04.2022

Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer , Dasarahalli Sub division, BBMP, Bangalore.**

Agency : **M/s KTR Constructions(Prop.Sri.K.T.Ravi), Contractor, Mysore.**

Name of Work Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 18.04.2022 to 20.04.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	21.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Date : 20.04.2022

Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer , Dasarahalli Sub division, BBMP, Bangalore.**

Agency : **M/s KTR Constructions(Prop.Sri.K.T.Ravi), Contractor, Mysore.**

Name of Work Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 18.04.2022 to 20.04.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	23.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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JobNo: CACE/BBMP/KTR/W.No.14 /2021-22 Date : 11.05.2022

TEST RESULTS OF AGGREGATE SHAPE TEST
(Flakiness & Elongation)

Client : Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.

Agency : M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.

Name of work Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.

BIS Code : IS 2386 Part (1):1963

Date of Test : 11.05.2022

Type of Mix : Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	12.30	12.80	25.10	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	12.70	13.10	25.80	

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Date: 11.05.2022

Aggregate Gradation Test

Client	**: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	**: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.**
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	11.05.2022

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.50	537	5.4	5.37	94.63	90 - 100	
19.00	1294	12.9	18.31	81.69	71 - 95	
13.20	1328	13.3	31.59	68.41	56 - 80	
4.75	2491	24.9	56.50	43.50	38 - 54	
2.36	1187	11.9	68.37	31.63	28 - 42	
0.300	1349	13.5	81.86	18.14	7 - 21	
0.075	1259	12.6	94.45	5.55	2 - 8	

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.5	741	7.4	7.41	92.59	90 - 100	
19	1493	14.9	22.34	77.66	71 - 95	
13.2	1249	12.5	34.83	65.17	56 - 80	
4.75	2431	24.3	59.14	40.86	38 - 54	
2.360	1251	12.5	71.65	28.35	28 - 42	
0.300	1312	13.1	84.77	15.23	7 - 21	
0.075	1198	12.0	96.75	3.25	2 - 8	

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Job No: CACE/BBMP/KTR/W.No.14 /2021-22 Date: **13.05.2022**

TEST REPORT ON PAVING BITUMEN

Client	**Assistant Executive Engineer,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	**M/s K T R Constructions(Prop.K.T.Ravi),** Contractor, Mysore.
Name of work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
BIS Code	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing	**13.05.2022**
Type of Mix	**Dense Graded Bituminous Macadam , VG 30**
Source of Location	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl.No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 0C, 100gms, 5sec, 1/10 mm	68	Min 45
2	Softening point, 0C	59	Min 47
3	Ductility at 250C, cm	>105	Min40
4	Flash Point, 0C	275	Min 220

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JobNo: CACE/BBMP/KTR/AW.No.14 /2021-22 Date : 11.05.2022

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : **Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**

Agency : **M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.**

Name of work Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.

Source / Location : Hot Mix Plant, Bangalore

BIS Code : IS 2386 Part (4):1963

Type of Mix : Dense Graded Bituminous Macadam

Date of test : 11.05.2022

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	382	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	83	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	299	302	
5	Aggregate Impact value = percent fines 100* (W2/W1) percent	21.73	22.29	**22.01**

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date: 13.05.2022

Specific Gravity And Water Absorption Test

Client	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
Agency	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	11.05.2022 to 13.05.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2023	2022	2021	
2	Weight of basket suspended in water	W_2 g	756	758	760	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1267	1264	1261	
4	Weight of saturated surface dry aggregate in air	W_3 g	2018	2019	2017	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	751	755	756	
6	Weight of oven dried aggregate	W_4 g	2007	2007	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.672	2.658	2.652	2.661
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.712	2.701	2.695	2.703
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.60%	0.60%	0.58%

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date: 19.05.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	:	**M/s K T R Constructions(Prop.K.T.Ravi),** Contractor, Mysore.
Name of the Work	:	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	19.05.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.34	10.12	9 Kn (min)
2	Marshal flow, mm	3.88	3.43	2 – 4
3	Percent air voids in Mineral Aggregate	14.73	14.21	13 – 15
4	Voids in Compacted Mix	4.91	4.72	3 – 6
5	Percent Voids filled with Bitumen	72.54	70.91	65 - 75
6	Density, g/cc	2.25	2.24	--

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date: 23.05.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	:	**M/s K T R Constructions(Prop.K.T.Ravi),** Contractor, Mysore.
Name of the Work	:	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	23.05.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.25	9.96	9 Kn (min)
2	Marshal flow, mm	2.71	3.08	2 – 4
3	Percent air voids in Mineral Aggregate	13.42	14.05	13 – 15
4	Voids in Compacted Mix	3.59	4.28	3 – 6
5	Percent Voids filled with Bitumen	68.73	71.24	65 - 75
6	Density, g/cc	2.21	2.23	--

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date: 19.05.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

Client	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
Agency	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Date of Testing	19.05.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	476.5	477.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23.50	22.50
7. Bitumen content in %	4.70	4.50
8. Average	4.60	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	40.8	40.8	8.6	91.4	90 - 100
19	72.1	112.9	23.7	76.3	71 - 95
13.2	64.9	177.8	37.3	62.7	56 - 80
4.75	76.3	254.1	53.3	46.7	38 - 54
2.360	65.9	320	67.2	32.8	28 - 42
0.300	90.7	410.7	86.2	13.8	7 - 21
0.075	22.1	432.8	90.8	9.2	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	34.4	34.4	7.2	92.8	90 - 100
19	75.8	110.2	23.1	76.9	71 - 95
13.2	66.2	176.4	36.9	63.1	56 - 80
4.75	86.90	263.3	55.1	44.9	38 - 54
2.360	74.3	337.6	70.7	29.3	28 - 42
0.300	98.1	435.7	91.2	8.8	7 - 21
0.075	23.5	459.2	96.2	3.8	2 - 8

Note:

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date: 23.05.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX AASHTO T 164 & AASHTO T 30

Client	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
Agency	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Date of Testing	23.05.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	476	477
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	24.00	23.00
7. Bitumen content in %	4.80	4.60
8. Average	4.70	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	42.7	42.7	9.0	91.0	90 - 100
19	74.9	117.6	24.7	75.3	71 - 95
13.2	62.3	179.9	37.8	62.2	56 - 80
4.75	78.1	258	54.2	45.8	38 - 54
2.360	68.2	326.2	68.5	31.5	28 - 42
0.300	91.9	418.1	87.8	12.2	7 - 21
0.075	21.7	439.8	92.4	7.6	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	36.1	36.1	7.6	92.4	90 - 100
19	72.9	109	22.9	77.1	71 - 95
13.2	68.2	177.2	37.1	62.9	56 - 80
4.75	87.30	264.5	55.5	44.5	38 - 54
2.360	75.2	339.7	71.2	28.8	28 - 42
0.300	99.3	439	92.0	8.0	7 - 21
0.075	24.2	463.2	97.1	2.9	2 - 8

ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರ
ಬಿ. ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಬೆಂಗಳೂರು-560073

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date: 15.06.2022

Aggregate Impact Value

Client	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
Agency	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2022

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	387	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	85.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	299.5	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.48	22.21	22.34

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date : 15.06.2022

Aggregate Gradation Test

IS : 2386 Part I

Client	**: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	**: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.**
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2022

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	487	9.74	9.74	90.26	90 - 100	
9.5	475	9.50	19.24	80.76	70 - 88	
4.75	675	13.50	32.74	67.26	53 - 71	
2.36	658	13.16	45.90	54.10	42 - 58	
1.18	551	11.02	56.92	43.08	34 - 48	
0.600	539	10.78	67.70	32.30	26 - 38	
0.300	487	9.74	77.44	22.56	18 - 28	
0.150	386	7.72	85.16	14.84	12 - 20	
0.075	487	9.74	94.90	5.10	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	458	9.16	9.16	90.84	90 - 100	
9.5	549	10.98	20.14	79.86	70 - 88	
4.75	683	13.66	33.80	66.20	53 - 71	
2.36	558	11.16	44.96	55.04	42 - 58	
1.18	576	11.52	56.48	43.52	34 - 48	
0.600	529	10.58	67.06	32.94	26 - 38	
0.300	693	13.86	80.92	19.08	18 - 28	
0.150	235	4.70	85.62	14.38	12 - 20	
0.075	487	9.74	95.36	4.64	4 - 10	

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date: 15.06.2022

TEST REPORT

Client	:	**Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	:	**M/s K T R Constructions(Prop.K.T.Ravi),** Contractor, Mysore.
Name of the work	:	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
IS Code	:	IS 73:2013, IS 1203:1978(RA 2008), IS 1205:1978(RA 2009), IS 1208:1978(RA 2009), IS 1209:1978(RA 2009)
Source of location	:	Hot mix Plant, Bangalore, VG 30
Date of testing	:	15.06.2022

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	58	Min 45
2	Softening point, ^{0}C	53	Min. 47
3	Ductility at 27^{0}C, cm	> 115	Min. 40
4	Flash Point, ^{0}C	275	Min. 220

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ಪ. ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ. ಜಜ.ಎಂ.ಪಿ
ಬೆಂಗಳೂರು 560073

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date : 15.06.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	**: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.**
Name of Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	12.7	13.2	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	13.1	13.3	
	Combined Flakiness & Elongation index	25.80	26.50	

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Date : 17.06.2022

Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Specific Gravity And Water Absorption Test

Client	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
Agency	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
Name of the Work	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2022 to 17.06.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2024	
2	Weight of basket suspended in water	W_2 g	754	755	757	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1266	1267	1267	
4	Weight of saturated surface dry aggregate in air	W_3 g	2021	2022	2023	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	755	755	756	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.662	2.664	2.661	2.662
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.702	2.703	2.701	2.702
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.55%	0.55%	0.55%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date: 22.06.2022

TEST REPORT ON STABILITY OF MIX

Client	:	Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
Agency	:	M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
Name of the Work	:	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	22.06.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.59	10.38	9 Kn (min)
2	Marshal flow, mm	2.73	3.68	2 – 4
3	Percent air voids in Mineral Aggregate	13.39	14.32	13 – 15
4	Voids in Compacted Mix	3.87	4.71	3 – 6
5	Percent Voids filled with Bitumen	69.81	70.73	65 - 75
6	Density, g/cc	2.21	2.24	--

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22

Date: 27.06.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.**
Agency	:	**M/s K T R Constructions(Prop.K.T.Ravi),** Contractor, Mysore.
Name of the Work	:	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	27.06.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.08	9.81	9 Kn (min)
2	Marshal flow, mm	3.23	2.87	2 – 4
3	Percent air voids in Mineral Aggregate	14.09	13.81	13 – 15
4	Voids in Compacted Mix	4.96	4.04	3 – 6
5	Percent Voids filled with Bitumen	70.93	69.13	65 - 75
6	Density, g/cc	2.25	2.23	--

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date : 22.06.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
AGENCY	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
NAME OF THE WORK	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	22.06.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	473	472
3. Weight of Asphalt and Mineral matter Extracted, g	27	28
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27	28
7. Bitumen content in %	5.40	5.60
8. Average	5.50	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	16.2	16.2	3.4	96.6	90 - 100
9.5	61.8	78	16.5	83.5	70 - 88
4.75	92.2	170.2	36.0	64.0	53 - 71
2.36	46.3	216.5	45.8	54.2	42 - 58
1.18	34.9	251.4	53.2	46.8	34 - 48
0.600	55.8	307.2	64.9	35.1	26 - 38
0.300	43.2	350.4	74.1	25.9	18 - 28
0.150	36.8	387.2	81.9	18.1	12 - 20
0.075	42.7	429.9	90.9	9.1	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	17.2	17.2	3.6	96.4	90 - 100
9.5	65.2	82.4	17.5	82.5	70 - 88
4.75	94.1	176.5	37.4	62.6	53 - 71
2.36	45.2	221.7	47.0	53.0	42 - 58
1.18	49.1	270.8	57.4	42.6	34 - 48
0.600	57.5	328.3	69.6	30.4	26 - 38
0.300	46.2	374.5	79.3	20.7	18 - 28
0.150	38.2	412.7	87.4	12.6	12 - 20
0.075	33.1	445.8	94.4	5.6	4 - 10

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Job No.: CACE/BBMP/KTR/W.No.14 /2021-22 Date : 27.06.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	: Assistant Executive Engineer ,Dasarahalli Sub division, BBMP, Bangalore.
AGENCY	: M/s K T R Constructions(Prop.K.T.Ravi), Contractor, Mysore.
NAME OF THE WORK	Improvements of roads and drains in Bhuvaneshwari Nagara and Other area in Bagalagunte ward no.14, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	27.06.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	471.5
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	28.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	28.5
7. Bitumen content in %	5.50	5.70
8. Average	5.60	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	17.7	17.7	3.7	96.3	90 - 100
9.5	64.8	82.5	17.5	82.5	70 - 88
4.75	92.1	174.6	37.0	63.0	53 - 71
2.36	43.7	218.3	46.2	53.8	42 - 58
1.18	39.2	257.5	54.5	45.5	34 - 48
0.600	52.9	310.4	65.7	34.3	26 - 38
0.300	45.9	356.3	75.4	24.6	18 - 28
0.150	34.2	390.5	82.6	17.4	12 - 20
0.075	45.9	436.4	92.4	7.6	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	15.8	15.8	3.4	96.6	90 - 100
9.5	63.7	79.5	16.9	83.1	70 - 88
4.75	61.8	141.3	30.0	70.0	53 - 71
2.36	51.2	192.5	40.8	59.2	42 - 58
1.18	42.9	235.4	49.9	50.1	34 - 48
0.600	51.9	287.3	60.9	39.1	26 - 38
0.300	50.7	338	71.7	28.3	18 - 28
0.150	44.7	382.7	81.2	18.8	12 - 20
0.075	47.3	430	91.2	8.8	4 - 10

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples collected at the site.
- Any Query regarding the report must be reported within 30 days from the date of testing.

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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